



Designing a Framework for Communal Software: Based on the Assessment Using Relation Modelling

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Abstract

Predicting and Identifying behavioral analysis in social media using big data analytics is exceptionally repetitive. Since data in motion are difficult to capture and process with existing innovation. In spite of the fact that there are numerous frameworks that have executed for user behavior analysis, it's as yet an upcoming and unexplored market that has more prominent potential for better advancements. So with the help of Hadoop framework, a new approach of designing a communal framework is proposed and it's used for predicting and identifying user's behavioral analysis in a community. The proposed work can be applied in the community-based environment where the prediction and identification of user behavior analysis has to be made with the semantic web approach. In addition to that, a suitable model for the communally accountable software objects where these objects would observe online communal network information is designed. Further, these objects in online communal network, assess them from the viewpoint of communally accountable performance based on the relation modeling conceptions. The location of communally accountable mediators is grounded in diverse methods. Diverse illustrations are grabbed from the analysis with microblog assessments, community semantic web, higher relations for communal web and social network sourced big information assessments. In the proposed framework, the analysis is based on the assessment/observation of the communally accountable performance of the communal media big data and design of higher-level relations as the model for the above mentioned assessments.

Keywords Community based computation · Network-based applications · Big data · Semantic web · Microblog assessments · Accountable software objects

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1 Introduction

Big data is one of the most rising innovation inclines that have the capacity for fundamentally changing the manner in which business associations utilize user behavior to break down and change it into valuable insights. Hadoop is a framework which helps to store and process huge volumes of data in real time. But it is not more suitable for predicting user behavioral analysis in streaming data. Centered on the propagation of communal network-based application, increased volume of information is prevailing on the cloud which might be assessed to acquire helpful performance and linguistic models of diverse culture based and social economic clusters which are moreover categorized by concerning age and gender. The portrayal of communally accountable software restricts the design of communally accountable mediator. The conceptions of the communally accountable software are employed for several domains like artificial intelligence, software architecture, distributed computing and semantic web. Its comprehensive ability might be disclosed, based on the arrival of fresh computing policies like service-oriented architecture. This work is compared with the communal network, including CoP, CoI, Semantic Web, Social media applications such as Twitter, Facebook and Human actions with multi-object relationship. The behavioral assessment of the accountable mediators in the model of multi-agent system framework offers promising outcomes. The purpose is to employ a fresh computing extent termed as community level [1]. These schemes are designed to prolong them to the social semantic web which offers an exponential improvement in the volume of data over the internet. The semantic web is based on the problems of effectively managing the data. Presently a bottom-up scheme recommended for the emergence of community semantic web [2]. Still, it has not been an appropriate scheme for the communally accountable semantic web. The top-down scheme is centered on the communally accountable higher-level relation for the social semantic web which intends to offer a feasible outcome. The designed scheme recommends meta-language assessments of the community media and big data over the cloud as an authentication scheme for the design. The communally accountable web requires time due to their increased capabilities and responsibilities in learning and altering the community. The community-based computation is a critical domain together with the implementation of forthcoming cohorts on the web.

The communal networks are the overt characterization of the associations prevailing among the users and clusters in a community. For summarizations, these networks are quite easy with easy visualizations with nodes as the individuals and clusters alongside with the associations for the interactions. Presently the associations could determine all kinds of associations, regular, familiarity and specialized. The communal networks have designed from schemes located in a diverse domain comprising sociology, anthropology, and firm-based analysis. The communal network assessments are employed for instance for symbolizing and assessing the firm models of the employee within a business firm, the location of key users and recommends the model alterations for enhancing the behavioral units.

Diverse of these communal networks-based virtual communities have initiated to make the public members, civic profile data comprising communal associations employing the semantic web language RDF (Resource Description Framework). Sev-

eral employ RDF terminologies entailed by the friend of friend relations, combined with the fresh terms as required. The utilization of broadly known and distributed relations of these data allows synchronization among the systems. Precisely the RDF is modeled as an information distribution protocol benefitting scalability. The sole systems could expand the terms as required without bothering the capability to aggregate and incorporate data. The scheme is available to diverse possibilities for data aggregation, combination, and blending on the internet.

In real-time, communal software is used in universities and colleges that build on the practices of open source software communities. Years of research speaks to the merits of community-centered learning, albeit in traditional the blended, or online environments are in practice. The CoP (Community of Practice) and CoI (Community of Inquiry) are well-established, empirically tested frameworks that have been effectively used for exploration of community learning in educational & professional contexts [3, 4].

Communal Framework reduces the complexity and enhances the performance for identifying the user behavioral analysis in a communal environment. The volume of data and its assortment by the speed of generation contrasts quickly with the present circumstance. Capturing and processing the information for each interim look profoundly troublesome. A Communally Accountable Mediators serve to gather and consolidates user behavior data generated from the network and has the ability to implement the needed goals for assessing the conditions through appended, removed or revised based on some administered policies. The functionality works on the behind oh Hadoop technology. Microblog Assessment is to train the categorizer and the generates analytically weighted words. The choice of data is to be made by the assessor in the social media repository. The assessor additionally screens the data. Live observation is done and linear processing is utilized as a linear broker. Data from the social web, www are recovered through the communal semantic web. A communal framework helps to connect the social media applications like Facebook, Twitter, LinkedIn and etc., in the future, so forth in future to anticipate the user behavior based on their specialization.

2 Related Work

The prevailing of online communal networks comprises an individual precise data generating attractive possibilities for diverse applications extending from the marketing to community groups. Moreover, safety and also security-related issues are essential to be resolved for generating these applications. The enhancement of these communal networks resembles the initial phase for resolving the prevailing safety and security concerns associated with the online communal networks. For resolving diverse of the prevailing restrictions, the design of simulation-based communal network employing artificial information could be employed for verifying the efficacy of the semantic analysis-based schemes as per the conventional recommendations.

The semantic web guaranteed to assure a fresh cohort of the intellectual application by offering programs and software mediators with volume and efficient manner to distribute the data. Few issues of big data in social networks are the social network analysis together with security aspects [5]. Researchers proposed an effective

methodology to extract a person's information from the Web by utilizing the existing meta-data and adding certain more metadata [6]. The development of Web 2.0 with its increasingly accepted social sites like blogs, Facebook, Twitter, review and also sites has motivated the public to state their opinions openly and utmost frequently than before. This brings the development of the emerging field termed as sentiment explorations which target to translate disparate human emotions into hard data. LCI is a social channel exploration platform that taps into what is being said to comprehend the sentiment with the specific competency of doing in nearer real-time [7]. TRCM (Transaction-centered Rule Change Mining) spots rules alterations grounded on hashtags prevailing in tweets and how the alterations relate to occurrences/events of the real world is proposed in [8]. All the rules spotted are applied to the real world as a decision supporting tool for disparate entities, encompassing organizations, government, and individuals. Even movie's box-office revenues can be forecasted even before its release utilizing a linear regression method [9].

Twitter specifically well-matched as a source of real-time event content. Extensive experiments are done on millions of Twitter messages for exploring the stream of Twitter messages to distinguish betwixt messages about real-world incidents as well as non-event messages [10]. The data in multiple disciplines like Web analysis, social networks, etc. is link-centered, and the link structure is utilized for numerous disparate data mining works. The familiar Katz methodology, utilized for link forecast is expanded to bipartite graphs, in addition, assessed in a scalable manner utilizing truncated singular value decomposition [11].

The semantic web permits the individuals and clusters to entail distributable relations, a set of classes, elements, and entities with clearly portrayed an explicit description. These relations allow the developers to examine distribute and swap data for improving synchronization, sharing and service related frameworks. The implementation and investigations of the semantic web offer facts in terms of conception and schemes which are altered and employed. The broad variety of present relations are a friend of a friend entails a term which could be employed to describe, swap and explore for communal data which entails portrayal of the individual their elements and links with other. The intention is to analyze the conceptions stating the communal networks and the semantic web followed by the portrayal of the mechanism constituted in a friend of a friend and are used presently on the semantic web.

The assessment of communal networks offers a visualization scheme to symbolize the framework of the communal networks, policy conditions in these networks, precise sub-networks and degradations of the individuals and actions. The online communal base such as Facebook [12] arranges into immense social networks permitting the individuals to link [13], communicate and distribute their online actions across diverse social applications. The prolonged assessment of these processes employing the semantic web model. It comprises the semantics of these visualization-based assessments of these communal networks and deals with a broad variety of their associations and exchanges. The intention is to offer a scheme for assessing the real-time communal networks with more than 70000 users linking, communicating and distributing data.

Human actions are generally signified by utilizing multi-object relationships. As for Tensor Factorization, Semantic Data Representation integrates semantics with the

tensor factorization [14, 15]. A study on the estimation of coastal communities' susceptibility to floods utilizing indicator-centered approach augments as exhibited in [16] enriches public understanding of the degree of flood risks in the GAMA coast and contributes awareness to augment their consideration on place-specific adaptation strategy. The study takes data as of a 300-household survey, interviews and stakeholder meetings with local community leaders to build an incorporated vulnerability index. The index encompasses 7 elements like i) household socioeconomic features ii) dwelling type iii) community and household flood adaptation plans iv) house & house environment v) perception and experience of flood risks vi) physical characteristics and vii) house location [17].

The intention of the communally accountable software is based on the assessment of the conventional multi-mediator system modeling. Centered on the creation of the community web with governing characteristics of web 2.0. Our work can be applied in the community-based environment where the prediction and identification of user behavior analysis has to be made with the semantic web approach.

3 Communally Accountable Mediators

The software mediators are regarded to be the crucial mechanism for addressing the intricate issues. These mediators are mobile software modules which employ scattered computing policies. The amalgamation of mediators is the prime importance of prevailing numerous illustrations of the booming synchronized computations.

Communally Accountable Mediators reduce the complexity of collecting data from various sources. It is accomplished by designing a communal framework. To enhance the performance for identifying the user behavioral analysis in a communal domain. To recognize the Utilization of optimal key items between a cluster and assorted cluster for foreseeing the user behavior analysis. The framework of the mediator software is displayed in Fig. 1. It collects and combines user's transmission utilization of the network. The user-related activities monitored and grabbed by other agents are fed as input into the mediator framework which is the mode of communication. Based on which the intention and its possible acknowledgments are evaluated along with its status. It has the ability to implement the needed goals for assessing the conditions where fresh motives are also appended, removed or revised based on some administered policies. The goals are gathered and processed for implementing them, which gets its perception from the environment and which is again evaluated to repeat the process in terms of activities. This is the notable process of this framework in this proposed system. Centered on the concentration on the improvement initially, there was tremendous importance on the comprehensive system model and features as evaluated against the extent of mobility of the unique mediator. The scheme is termed as duplication scheme which later on based on the increased appearance of the fresh scheme termed as builder scheme where the unique mediators are allowed more while the minimal importance is offered a sacred viewpoint of the system. Both the scheme holds their merits alongside the setbacks. The conception of the communally accountable mediator is perceived concerning their abilities in addressing the issues in which each and every mediator are mobile mediator which are accountable for their unique

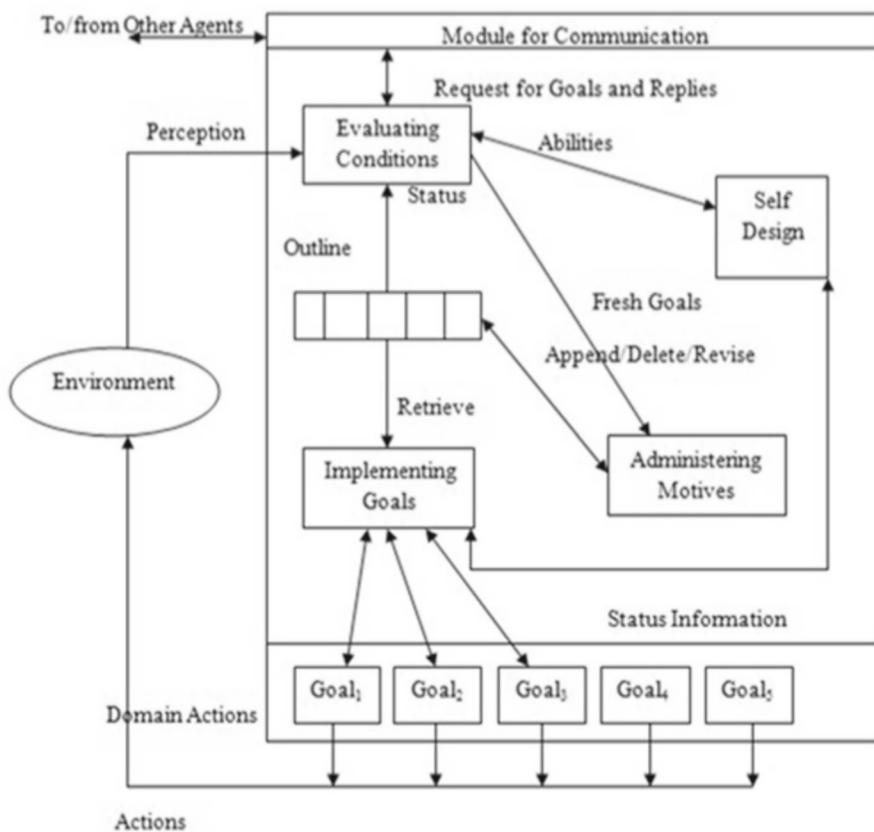


Fig. 1 Mediator framework

issues, addressing abilities which is a segment of a system or area of mediators whose communal liability is articulated using the responsibility in offering synchronized to the other mediators. Therefore, it is necessary to offer stability among the unique responsibilities as portrayed in Fig. 1. The communally accountable mediator's position is grounded on an assortment of methods. Varied elucidations are grabbed from the analysis with microblog assessments.

3.1 Microblog Assessment

The communal media and also a big data assessment of the cloud computing seem to the future generation thriving disputes for the computer analysts. Immense volumes of information are created every day by these microblog services say Twitter, Facebook, etc. The individuals are attracted to extracting the information associated with their demands and screening the unwanted information. The schemes used comprises the generation of several varieties of screening and categorizes more autonomously,

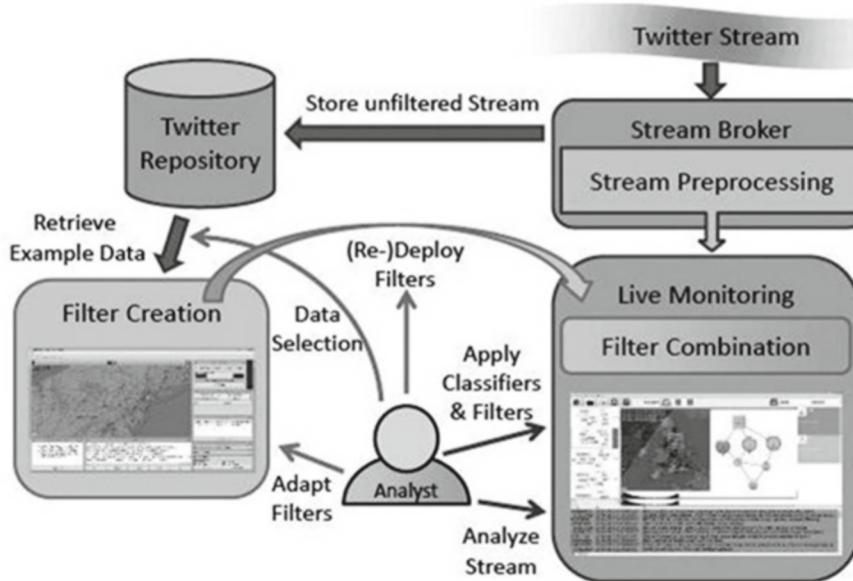


Fig. 2 Training of categorizer along with the generation of analytically weighted word screening

observing the surrounding and capability to aid regulation and it comprises the flow processing and also big data assessment over the cloud system.

The above Fig. 2 proffers an outline of the steps that are involved in training the categorizer and the generation of analytically weighted word screening. The choice of data is made by the assessor in the social media repository. The assessor also screens the data. Live observation is done and linear processing is utilized as a linear broker.

3.2 Communal Semantic Web

The advancement of the communal web is a key development in making the internet more self-governing channel, allowing the individuals to distribute their data but also has the ability to perform some synchronized works and it is represented in the Fig. 3. The generation of data by the individuals is also termed as a person sourcing which hinders the manner the internet is employed. Moreover, this policy tosses some fresh disputes. The non-accessibility of any regular protocols for these distributed data does not permit the understanding of its comprehensive abilities. The semantic web community is attempting to locate a possibility to address this huge dispute. The appearance of semantically associated online communities and also the friend of a friend are some attempts which make the communal web interworking. The semantically associated online communities offer a model to handle semantic problems comprised of the online community. Presently diverse of these community works independently obstructing recycle of profiling data. The semantically associated online communities offer the needed relics for addressing the blogs, Wikipedia, podcast and also other related communal network information. The semantically associated

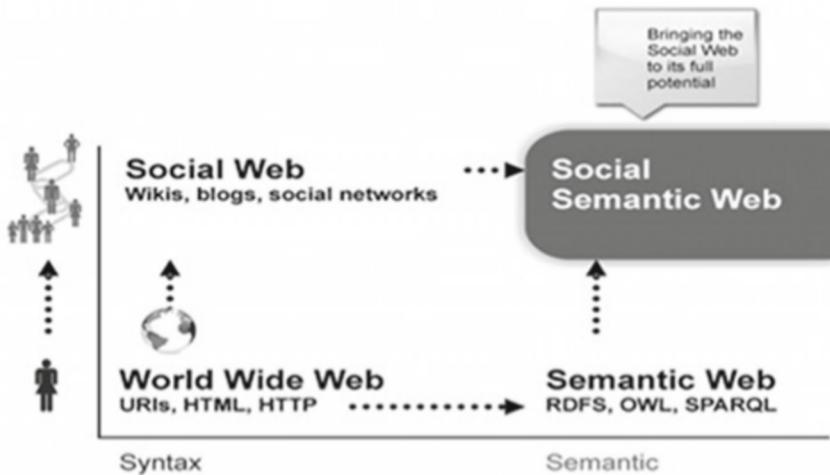


Fig. 3 Communal semantic web

online communities employ resource description framework as metadata framework. Additional schemes to the communal semantic web recommend the bottom-up scheme to create relations from the adjacencies. Its grounds on the feature of people sourcing which has improved input than the prevailing professionals. It places importance on the easiness and effectiveness (Fig. 3).

3.3 Higher Relations

The friend of a friend is employed to symbolize the associations in diverse relations but several attempts are performed to design communal conceptions like communal associations and educational associations. It could be moreover prolonged to comprise the communal models.

3.4 Big Data Assessments

The tremendous expansions in data created by the firms, online communities, and sensor-based systems are creating an event termed as information overflow. The big data assessment discloses the concealed frameworks in the gathered information that makes fresh information aiding the firms and community comprehensively. There is more attention to big data creating from the community networks.

The big data is symbolized based on three terms like capacity, speed, and difference. The assessment comprises conceptions from the intricate network hypotheses. Fresh parallel programming models say MapReduce is employed. The NoSQL systems are acquiring preferences. The suppleness of these systems aids the linear processing is an additional domain of significance. The safety-related problems are a great challenge. The accumulation of data assessments broadens the extent of diverse areas.

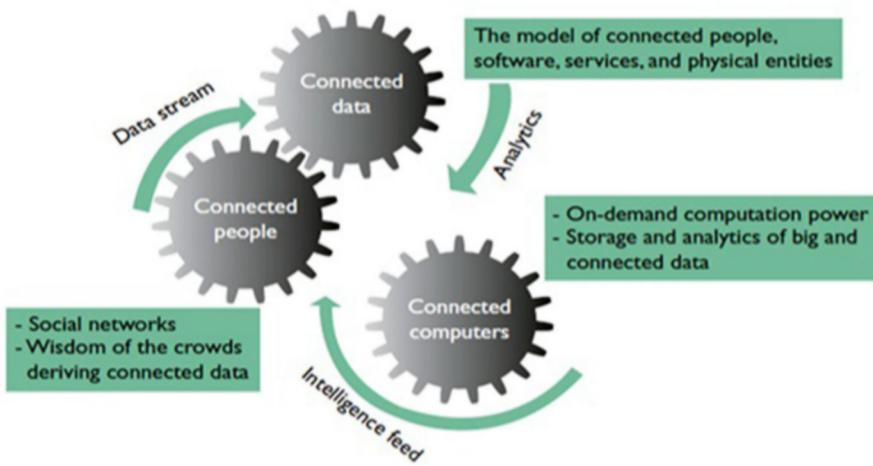


Fig. 4 Big data assessment

The big data assessment is depicted in Fig. 4. It shows the interconnection between various components. The data stream is a basic component to connect people. It includes the community networks and the understandings of the crowds in deriving the connected data. The analytics are needed to connect the data from different people. The intelligence feed represents the on-demand computation power, storage, and analytics of connected data and big data for connecting computers that are spread across different geographic regions.

4 Design and Implementation

It is designed to view the issues with an insight of the relation modelling. The relation modelling comprises the below-stated issues.

4.1 Modelling Relations

The design of relation tasks comprises preservation, modelling and aiding the actions. The task does not locate the order of these activities. The life cycle of the relations locates the order.

4.2 Assessing Relations

The assessments of relations comprise authorization, evaluations, reliability, unity, and succinctness. The assessment of classifications, faults might be located because of variation, vagueness, and duplications. The errors related to vagueness might be additionally categorized as circular, segments and faults in semantics.

4.3 Design Using Conventional Ontology Related Languages

The ontologies might be modelled in diversely prevailing ontology related languages. The precise choice of the ontology language is crucial where these languages vary immensely due to their basic characterization policies that are different from the structure, narration logic, order logic as well as semantic networks.

4.4 Relation Markup Language

The languages are a basis for semantic web with utmost implementations which transpires within this domain so it may have certain alterations. These languages are basically grounded on XML (Extensive Markup Language). XML language is more similar to the HTML. XML is utilized in the proposed system as it is a general format for web data and structured data. Additionally, it is a platform of autonomous formats and is utilized to develop other custom-made markup languages. It also describes the necessary content in a perfect manner and performs a notable role in sharing data across the web.

4.5 Relation Tools

The relation tools might be categorized as tools for implementation, tools for assessments, combination and grouping tools, explanatory tools, tools for query, suggestion engines and tools for knowledge.

4.6 Designed Scheme

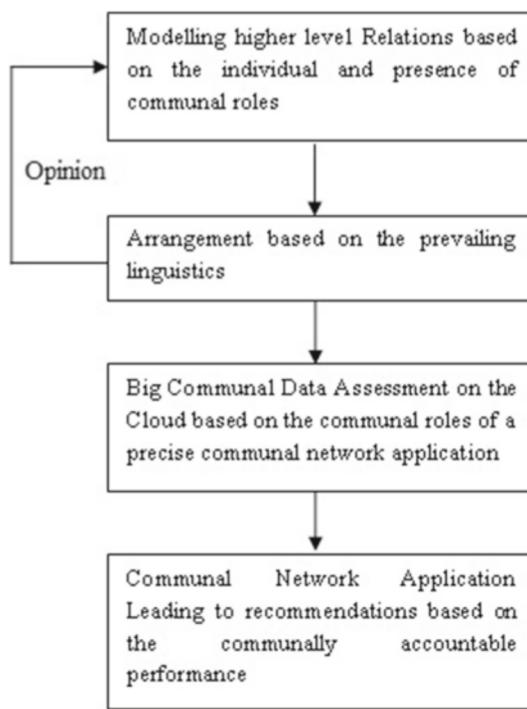
The scheme is categorized into four schemes which are broadly portrayed as depicted in Fig. 5.

Phase 1 is about the design of fresh higher-level relations with the intention of community-based features of human features which are grabbed from a freshly designed individual and coexistence of viewpoints. The preliminary phase of the designing scheme focuses on obtaining high-level relations. This is performed to obtain all the related features that are requisite to utilize the proposed system. The features that are regarded are the features that describe an individual. This step as well determines the availability of numerous viewpoints.

Phase 2 is the subsequent phase that has to be executed in the designing stage. In this phase, the features that are obtained in phase 1 are arranged. The arrangement is grounded on how the features are related amongst themselves. This step is done with special consideration to the prevailing linguistic relations like the WordNet that is frequently utilized as an incremental process.

Phase 3 is the consecutive step that is done for the implementation of the proposed work. In this phase, the related features are then subjected to assessment. The cloud allows the transfer of data across the network. The Big Communal data assessment is executed on the cloud grounded on the communal roles of a précised communal

Fig. 5 Ontology-based assessment of the communal big data as a categorizer



network application. Normally, this phase comprises ontology-based assessment of the communal big data as a categorizer.

Phase 4 is grounded on the representation of communal web applications to observe the real-time communally accountable conception/performance of the users and positive recommendations as of the application and also the verification as a conception.

5 Performance Analysis

The resource descriptive frameworks don't have any methods of the needed elements for illustration the incidences of a friend of a friend might emerge with diverse sorts and volume of data. It is monitored that almost 16 elements with the area friend of a friend are portrayed in the actual friend of a friend relation and also more than 150 are modelled by other related relations grounded on the relation index. For estimating their usage the gathered analytics regarding their elements are employed for entailing the incidences of a friend of a friend where nearly 550 unique elements are employed. There are 36 elements employed by nearly 2% of the friend of a friend terms additionally the residual elements are seldom employed by the friend of a friend terms or moderately fresh and evaluated words. Figure 6 depicts the 16 regularly employed words in a friend of a friend and the ratio of terms employed which imitates the priority of their individual private data and occurrences of utilization imitates the priority of

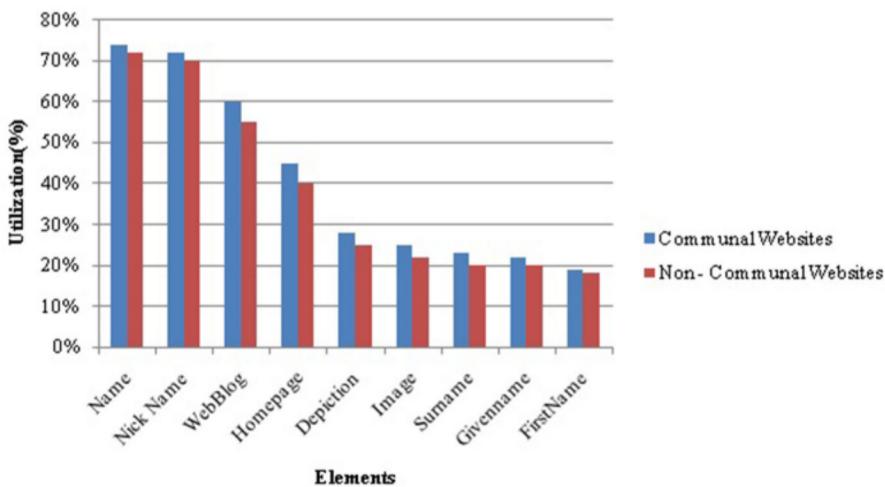


Fig. 6 Depiction of utilization of optimal elements

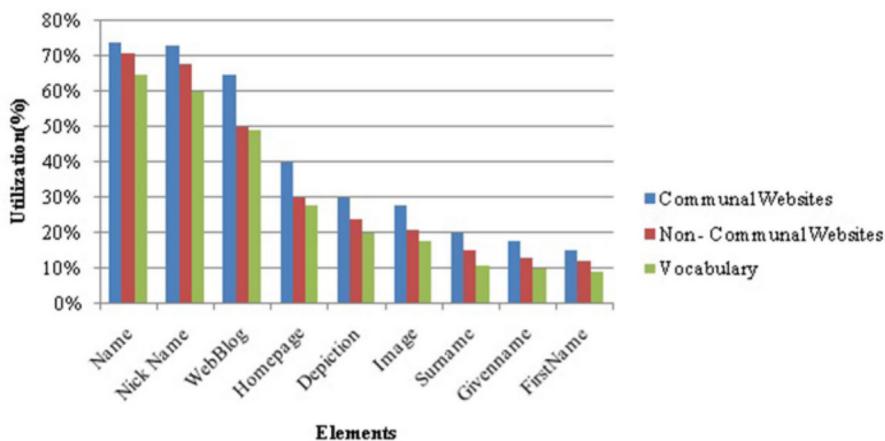


Fig. 7 Depiction of utilization of optimal elements in diverse clusters

distributing the inferred individuals data. Therefore it is likely to locate a description of an association to the individual's friend.

The elements are chosen. They provide a description of an association to the individual's friend. The descriptions like the name, nickname, web blog, homepage, description, image, given name, surname, and the first name are the elements that indicate the attributes of a friend. The usage of these optimal elements may direct to an augmented performance of the proposed system.

The influence of the community is also monitored from the communal websites concerning element utilization as in Fig. 7. The analytics reveals that the communal websites normally requires a nickname for all their profiles and might lose some unique elements for instance description for the homepage, surname, and non-communal

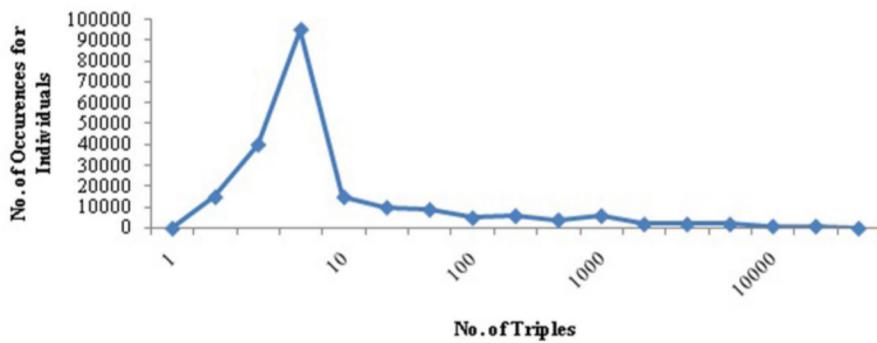


Fig. 8 Broadcasting triplets per individual's occurrences

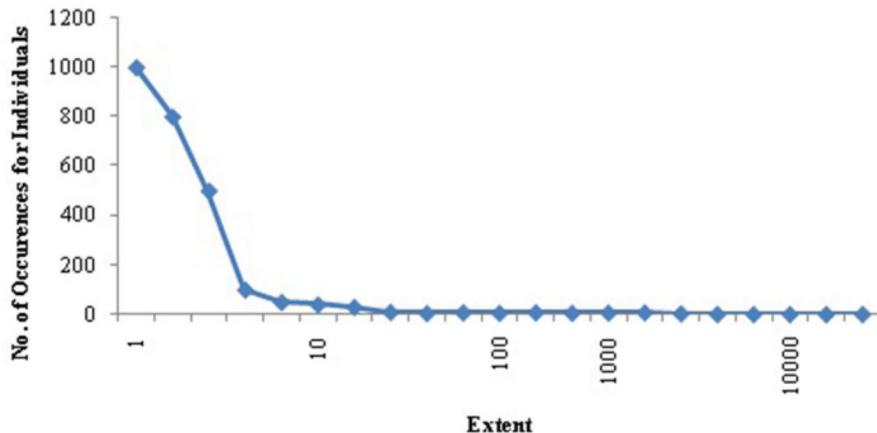


Fig. 9 Out extent broadcast within the cluster

website users need name which normally is utilized to infer name that is normally described on their homepage, first name, surname, last name, together with friends.

The terms employed by the communal websites are restricted in size while the non-communal websites could distort the comprehensive analytics of the friend of a friend information sets using their immense volume of information which therefore locates the community websites which is decisive for a fair estimation on the attention of individuals elements. Utilization is used as a parameter to determine the applicability of a particular element in the proposed system. The proposed system yields maximum utilization when the element used is the name of a friend. Since there are many other elements that contribute to the overall description of a friend, a single element does not yield 100% utilization.

The categorizer of the individual's illustration is of two classes as the generator offering the input related to their private profiles and preserves the friend of friend homepages and the inferred individuals are only entailed by the generators. Lastly, the utilization of easy heuristics is inferred individuals normally have a moderately minimal volume of triples which the generators are more. From Fig. 8, the choice of

fixed values has a sharp decline from seven to eight which offers 10.50% generators and 90.50%. Additional generators are utilized to locate the individual occurrences which are not the element of a friend of friend ontologies. From the Fig. 8, it is obvious that the volume of the triple is initially high, but as the volume of triples decreases as the generators increases.

The assessment of extent is a crucial tool in assessing the social networks and it is represented in Fig. 9. Based on the assessment nearly the broadcasts of in extent and out extent are analyzed. It is evident that only minimal individuals are blended more than one in extent or out extent. From all the blended individuals out of nearly 16,023 only about 12.02% have in relations and out relations (Fig. 9).

6 Conclusion

From the experimental analysis, it was seen that the proposed system had an elevated level of performance in comparison with the existing works. This model can well be extended to be adaptable for diverse applications such as social media applications with semantic approaches like Customer in eCommerce, Employee in the organization, Users in Social media environment such as Facebook, twitter, blog and etc., The performance improvement helps to understand the difference between the occurrence of frequent key items within a cluster and the occurrence of the individual in the behavioral analysis. The proposed approach can be utilized to predict the behavioral analysis, among the organization employees, Institution faculty—students and peoples within an environment. It increases the financial growth of an organization by understanding the behavioral analysis. Designing a communal framework is well suited for predicting and identifying user's behavioral analysis in a community. The proposed system dealt with the design of a communally accounting software using relation modeling. Alongside the design of the scheme, the conception focuses on extended terms to comprise additional area relations into the model instead focused only on linguistic relations. The roles of the individuals in a community along with their linguistic relations were considered in this work.

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